

Growing trees in Wester Ross

Challenges facing woodland establishment on
the North West Coast of Scotland & reasons to
try!



WOODLAND
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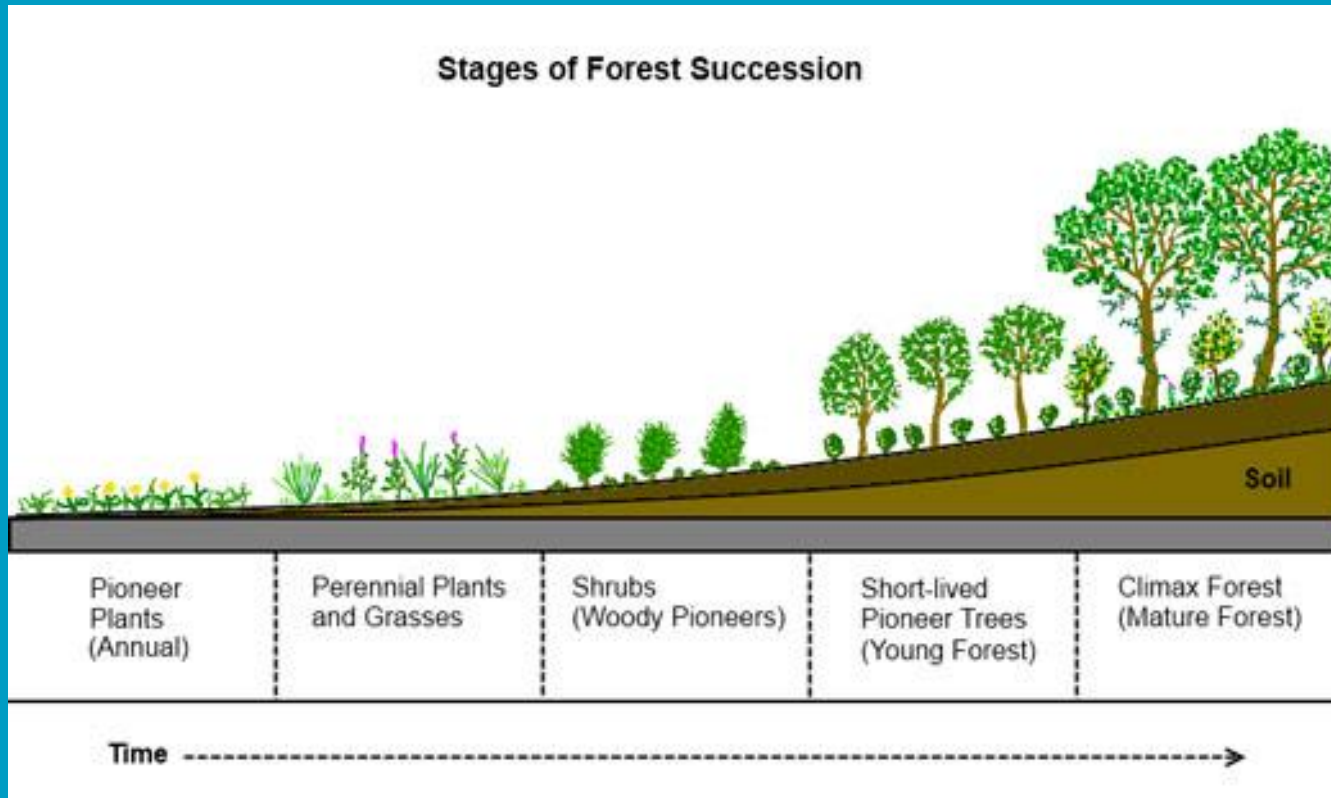
Introduction

- Environmental benefits of trees
- Benefits to animals
- The downsides
- Establishment in Wester Ross
- A local scheme

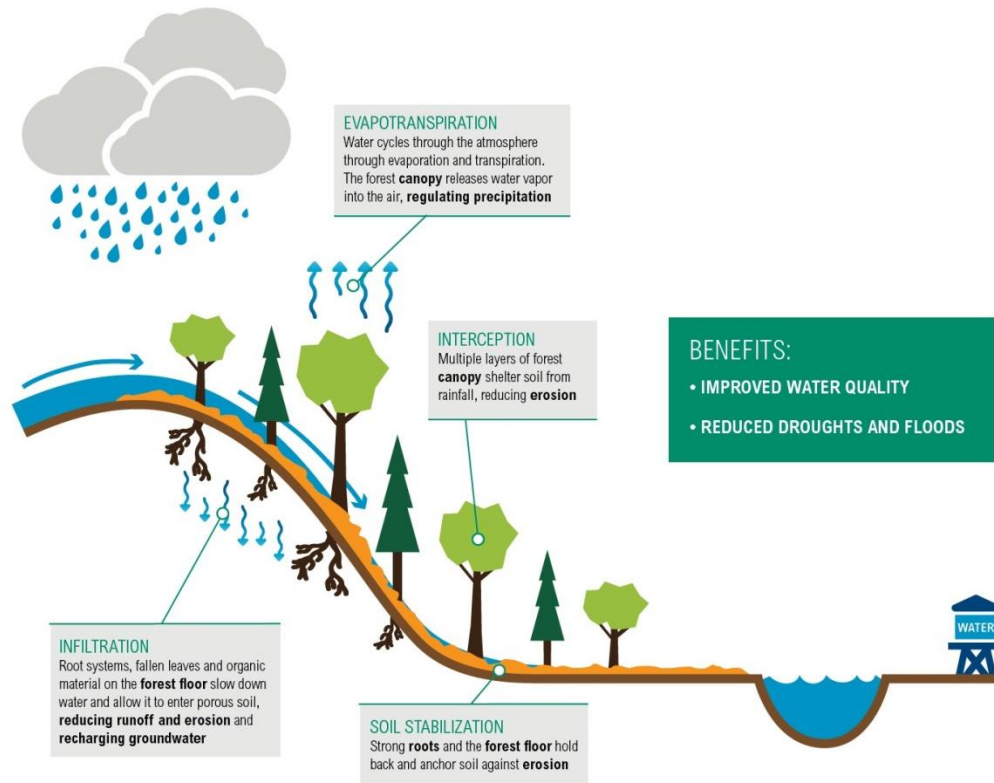
Environmental benefits of trees

- Protecting, building and improving soil structure
- Improving water infiltration
- Stabilising temperatures in the forest
- Providing shelter for flora and fauna
- Increasing plant diversity
- Soften harsh landscapes making them over attractive

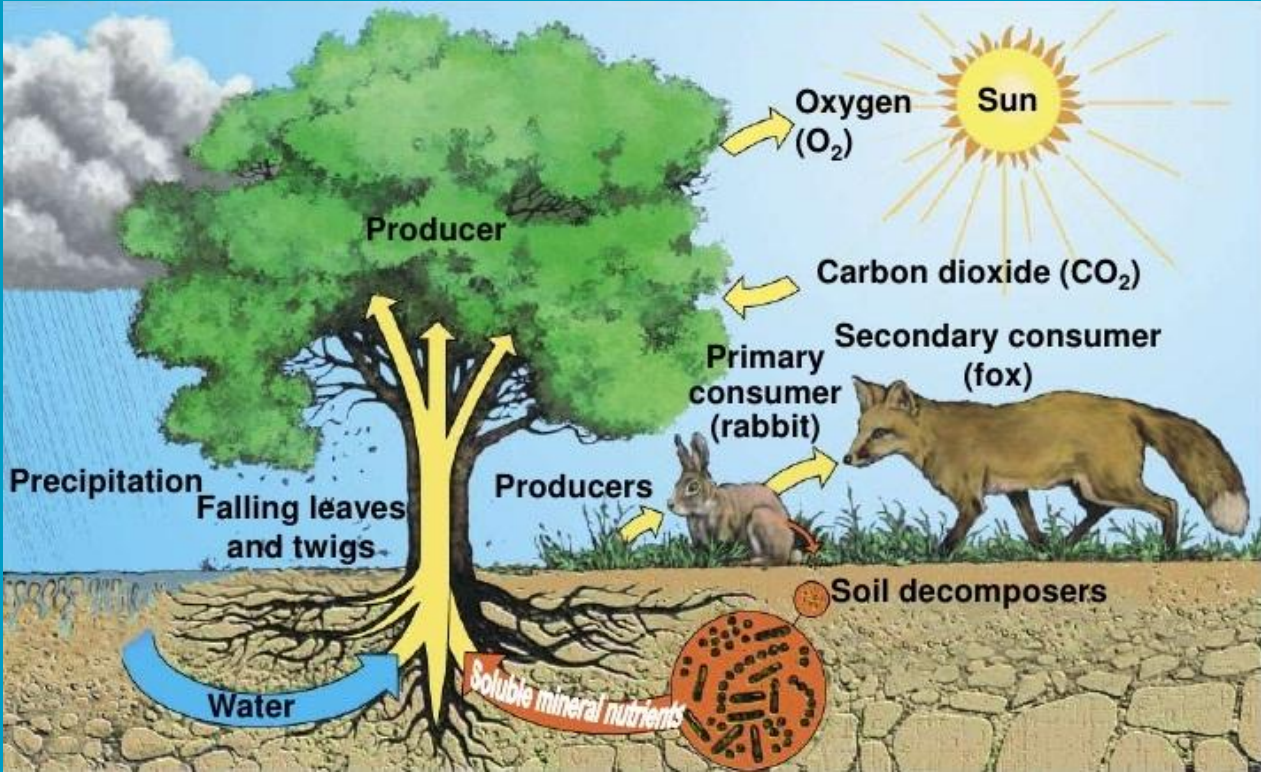
Succession and soil building



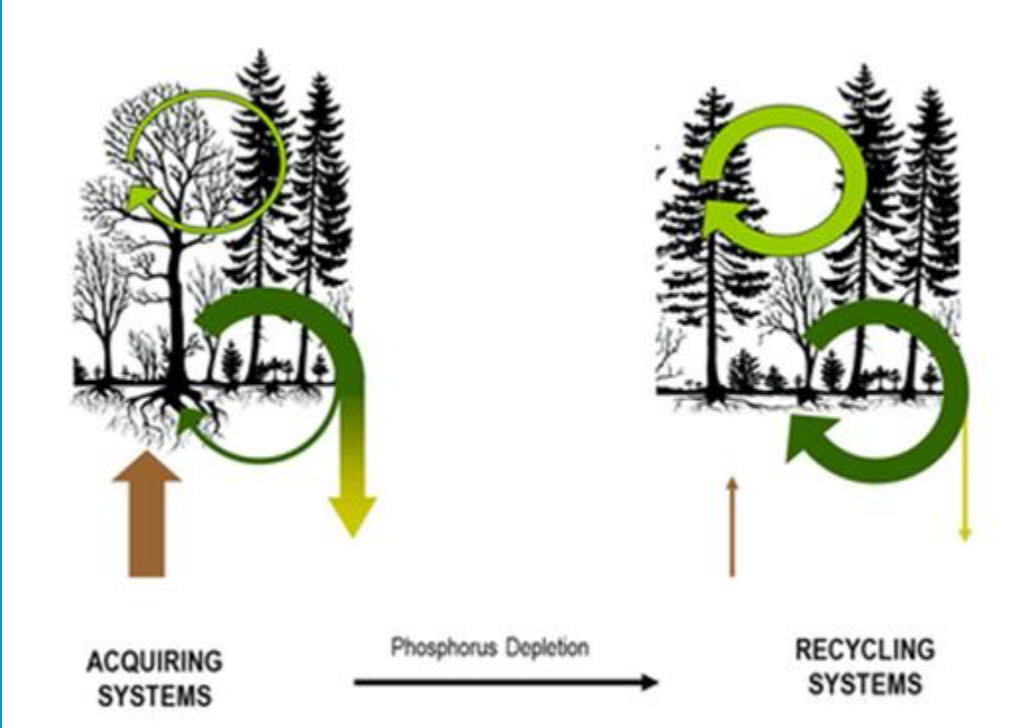
Water cycle and Erosion



Nutrient cycling basics

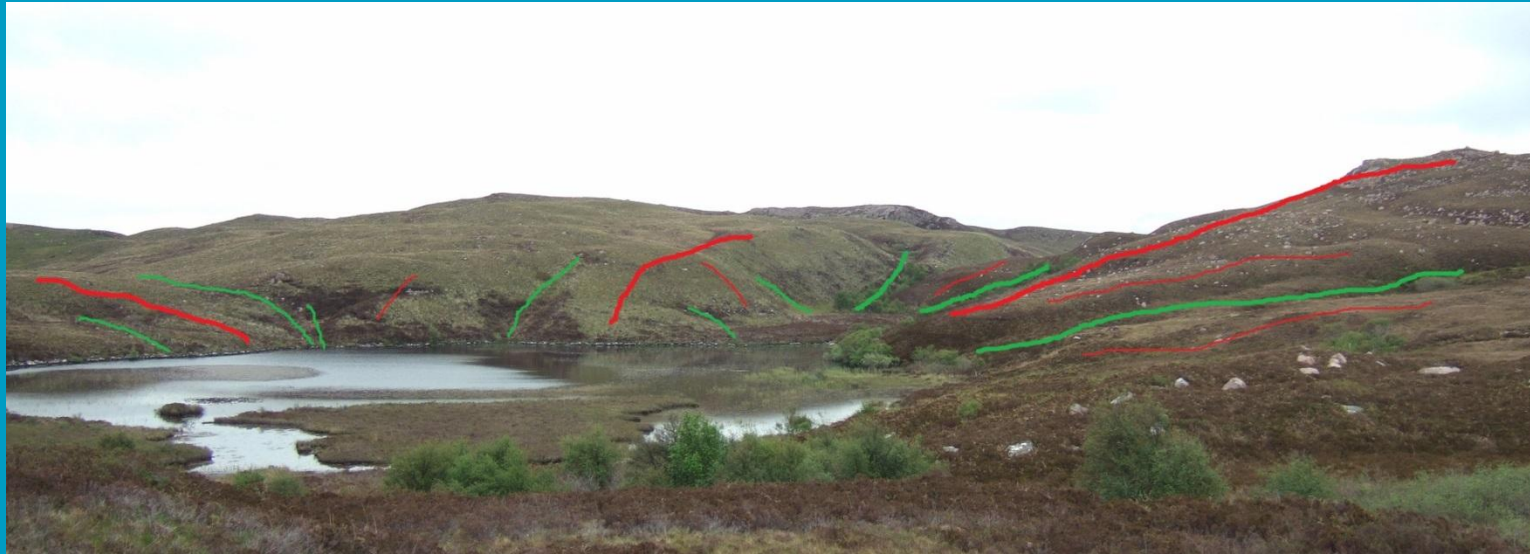


Phosphorus recycling



Landscape design

- Red lines of force, convex features, draw the eye down
- Green lines of force, concave features, draw the



Benefits to animals

Shelter is often thought of as the benefit of woodlands to livestock, there are a lot more benefits however, including;

- Improvement of grazing
- Sources of food
- Stronger parent/off-spring bond
- Reducing instances of disease
- Better breeding success
- Environmental benefits

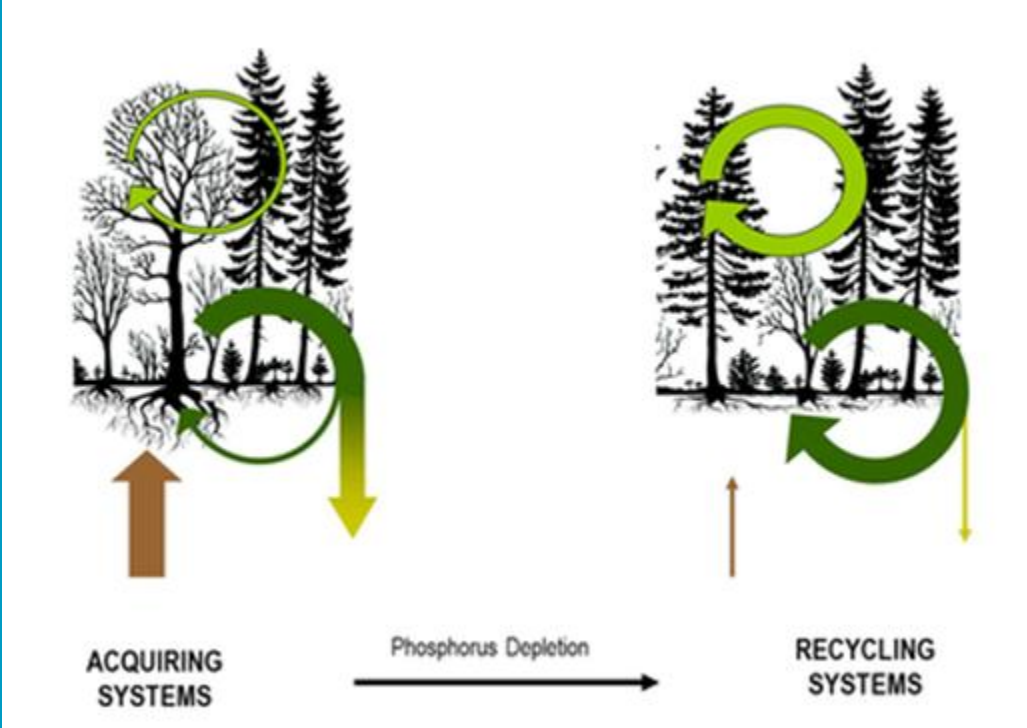
Livestock are already seeking shelter

This is a common site in the hills of Wester Ross



The depths shows how long shelter has been sought here

Phosphorus recycling





An ancient woodland Scots Pine stand on a croft near Beaully with a way-leave felled through it.

- On the right better grasses below the trees, wavy hair grass, bents, wood sorrel. The area still looks green
- Where the trees have been felled – Sphagnum mosses, Rashes, stunted Ling Heather, Deer grass and Bog Asphodil, along with a fair bit of poaching. The area looks brown
- Without the trees nutrients have leached, quality of grazing has suffered, and the top soil has started to erode.
- This way-leave was only felled within the last 5 years



- On the left Tussock grass, Purple Moor grass & Ling Heather have been replaced with softer grasses
- The trees are reaching nutrient deeper in the soil profiles
- Leaf litter is falling on ground increasing nutrient levels on the surface
- This wood was planted 20 years ago

The downsides to trees

Common complaints that I hear

- Trees harbour vermin
- You get ticks in woodland
- You only lose land to trees
- Trees make gathering harder
- You can't grow trees here

Trees harbour vermin

Trees will attract breeding pairs of corvids, and some species of raptor. Mammalian predators will also be attracted, however;

- Trees also provide a significant obstacle to aerial predators
- Feeding predators will bring in a lot of nutrients
- Woodlands will also provide good control sites
- With stronger bond could come better defence?!

You get ticks in woodland

- Ticks use a wide range of habitats, including woodland
- Ticks require humidity to survive inter feeding periods
- Ticks are present over most of Scotland
- Generally livestock are routinely treated for tick
- Treated livestock can act as 'tick mops'
- Everyone else will still have to take the usual precautions

You only lose land to trees

If a wood had been planted using Forestry Grant Scheme then it has to be protected from grazing for 20 years. In the meantime there are short term benefits, such as;

- Design fence lines to aid gathering
- Design schemes to enclose dangerous ground
- Some shelter will still be provided
- Adjacent ground will benefit from nutrient cycling

You only lose land to trees

At present if there is over a certain density of trees on a piece of ground it is not eligible for Basic Payment Scheme. This does not mean that the whole woodland area will necessarily be ineligible. The benefits of trees could potentially out way the land lost through ineligibility by;

- Reducing feed bills
- Reducing disease
- Higher lambing percentage
- Better lambing survival
- Improved grazing
- Reducing reliance on subsidies

Trees make gathering harder

- Not while the fences were up
- Forest gathering is carried out in other areas of Europe
- Harder than gathering in deep heather of bracken?

Trees don't grow here





Some trees even
choose to grow here
Birch, Willow and Rowan
regeneration at Slaggan

Establishing trees

Specific problems faced in Wester Ross

- Soil Erosion
- Nutrient depletion
- Lack of Mycorrhiza
- Exposure
- Deer numbers
- Fires
- Terrain
- Funding



An example of an
unplantable site
Soil would need to be rebuilt
before trees could be
established here



An example of an
plantable site
Vegetation cover has retained
soil

Mycorrhiza

Mycorrhizas, not roots, are the chief organs of nutrient uptake by land plants.” Smith, S.E. & Read, D.J. (2008). *Mycorrhizal symbiosis*. 3rd ed. Academic Press.

- Mycorrhiza literally ‘fungus-root’. In a mycorrhiza, specialised fungi invade plant roots where they form an interface for the exchange of nutrients. From the plant’s viewpoint, its most usual function is to facilitate the supply of phosphate. Mycorrhiza is the normal way of life for an estimated 90–95% of plants in all ecosystems on every continent. Mycorrhizal fungi are entirely dependent upon their plant partners, for they are unable to produce a basic foodstuff, carbohydrate, themselves but they do obtain it through the symbiosis. If separated from their plants, they cannot adapt; cannot survive. Therefore, if you remove the fungi, plant populations disintegrate and if you remove the plants you kill the fungi.

Adapted from – Mycorrhiza – a brief introduction – James Merryweather – produced for refertilising Wester Ross workshop 2016

- Simard observed the amazing interactions between different clusters of trees, noting that their relationships were dependent on factors such as proximity and how much shade they received on a given day. She found that trees were not competing but collaborating, sending things like carbon, water, nitrogen, phosphorus and even distress signals throughout their group as needed. <http://blog.ted.com/forest-for-the-trees-suzanne-simard-at-tedsummit/>

Or you could watch the full video here;

https://www.ted.com/talks/suzanne_simard_how_trees_talk_to_each_other#t-2224

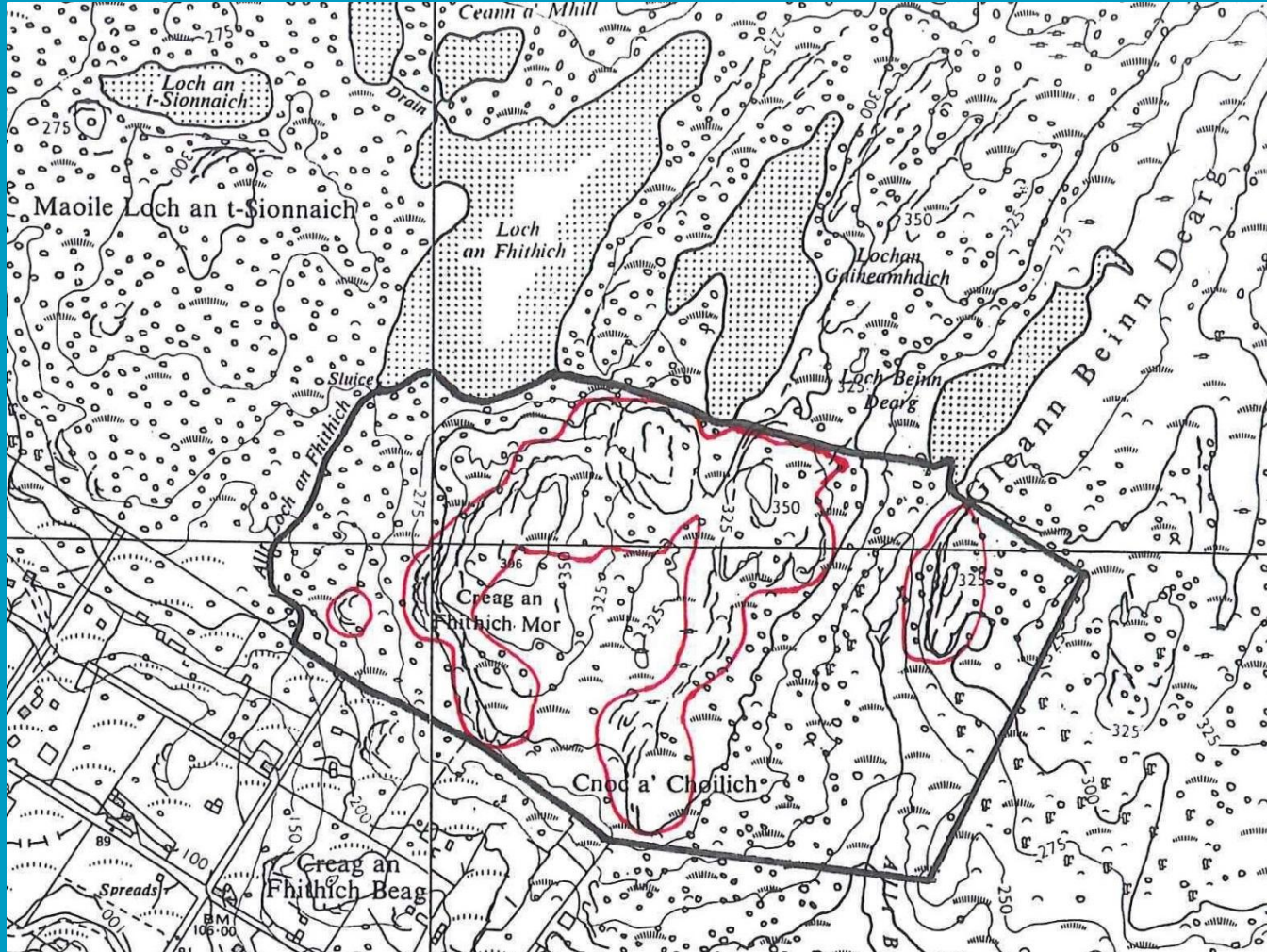


The Slaggan Example
Established trees feeding new
regeneration through Mycorrhiza
to out compete heather



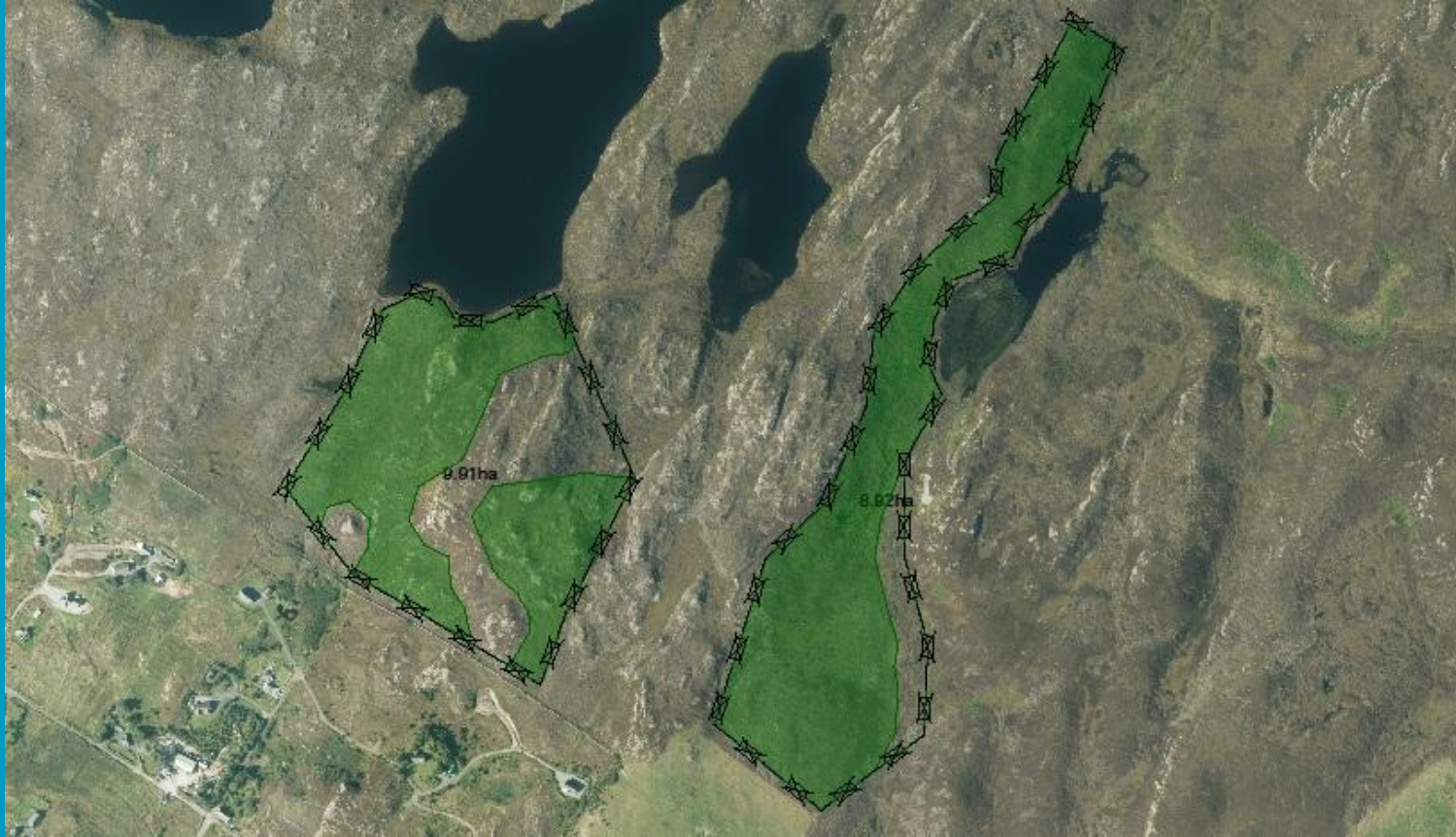
Under the Heather - more
Birch seedlings

Aultbea SSSI



Black line – SSSI Boundary, Red line – Crucial area boundary

Potential scheme boundaries



The potential

Eco-system repair of this kind could

- Improvements to livestock welfare
- Relieve reliance on subsidies
- Very sustainable when integrated with crofting
- Improve fishing
- Improved landscape would support tourism in the area
- Improves ground for future generations

Without trees
mining & recycling
nutrients are leached or
lost reducing fertility

Deer
bring nutrients
back up
hill

Trees improve soil
structure, improve air
& water infiltration
drying lower down slope

Lack of ground
cover causes
soil to erode
completely

Limited
ground cover
causes soil to slide
downhill

Trees shelter livestock
reduce disease
& increase lambing
percentages

Caused by
tree removal,
over burning &
over grazing

Trout feed
on windblown
insects
from trees

Limited shelter
on open hillside =
erosion around
existing shelter

No tree cover =
less water
infiltration =
winter basins

Fish carcasses
for Otters feeding -
nutrient spread
in landscape

Mycorrhizal network
Birch seedlings
fed by
mother trees

Birds and animals
attracted to
trees bring in
nutrients

Although top soil
severely eroded,
lower horizons
still present

Scrub species in
remaining top soil
protect, build &
improve it

Insects are a
source of food
for birds, mammals
and fish

Diversity of
ground flora
larger as nutrients
begin cycling

Mature tree roots
mine nutrients & cycle
them through leaf
litter, dead branches etc.

Trees In Wester Ross

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Illustrated by Jane Chisholm

Thank you
for listening

Want to improve your ground?

Get in touch

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